Overview of SAS Release 6.12

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Course Objectives

- review products licensed at NIH
- use the windows of SAS's Display Manager
- run programs interactively and in batch mode
- customize the SAS workspace
- use the help facility
- copy text from SAS to other applications
- import and export external data
- use the graphics editor
- view brief demonstration of various SAS products

SAS Products Licensed at NIH

- **Base SAS**

  Contains a data management facility, a programming language, data analysis and reporting procedures.
- **SAS/AF**

  Allows users to create interactive windowing applications that can access the entire SAS System.
- **SAS/ASSIST**

  A windowing facility that lets the user run the SAS System by making selections from a series of menus.

Products Licensed at NIH (continued)

- **SAS/CALC**

  A spreadsheet software that features formulas, linked spreadsheets, goal-seeking, what-if analysis, programming, drilldown and graphing.

- **SAS/CONNECT**

  Enables a local SAS session to establish connections with one or more remote SAS sessions.

- **SAS/EIS**

  For developing and maintaining executive information systems.

- **SAS/FSP**

  Offers interactive full-screen facilities for data entry, editing and retrieval of SAS files.

Products Licensed at NIH (continued)

- **SAS/GRAPH**

  Used to produce high quality plots, barcharts, maps, text graphs and three-dimensional graphs.

- **SAS/IML**

  An interactive matrix facility for advanced mathematical and statistical needs.

- **SAS/INSIGHT**

  An interactive tool for data exploration using interactive graphs, analysis of variance, regression, the generalized linear model and other statistical methods.

- **SAS/ACCESS Interface for PC File Formats**

  Provides an interface between the SAS System and other popular PC file formats like dBase, Lotus 1-2-3, and Excel.

Products Licensed at NIH (continued)

- **SAS/LAB**

  Used for exploring data with graphs, performing standard statistical analyses, and producing software-generated interpretations of your analyses.

- **SAS/STAT**

  Provides procedures for regression analysis, analysis of variance, categorical data analysis, multivariate analysis, discriminant analysis, scoring procedures and survival analysis.

- **SAS/TUTOR**

  A computer based course covering the fundamental concepts of SAS.

Products Licensed at NIH (continued)

Just added:

- **SAS/ACCESS Interface to ODBC**

  Provides access to different data sources via the SQL Pass-Thru-Facility and the ODBC Manager.
- **SAS/ETS**

  Integrated capabilities for time series analysis and forecasting, econometrics and systems modeling, financial analysis and reporting, and access to financial databases..
- **SAS/OR**

  The software includes tools for mathematical programming, scheduling, decision analysis, and drawing Gantt charts and network diagrams.
- **SAS/QC**

  Provides a comprehensive set of tools for statistical quality improvement.

Documentation

- SAS Companion to the Microsoft Windows Environment
- SAS Language: Reference, Version 6
- SAS Procedures Guide, Version 6
- guides for the SAS products you use

To Obtain Software and Documentation

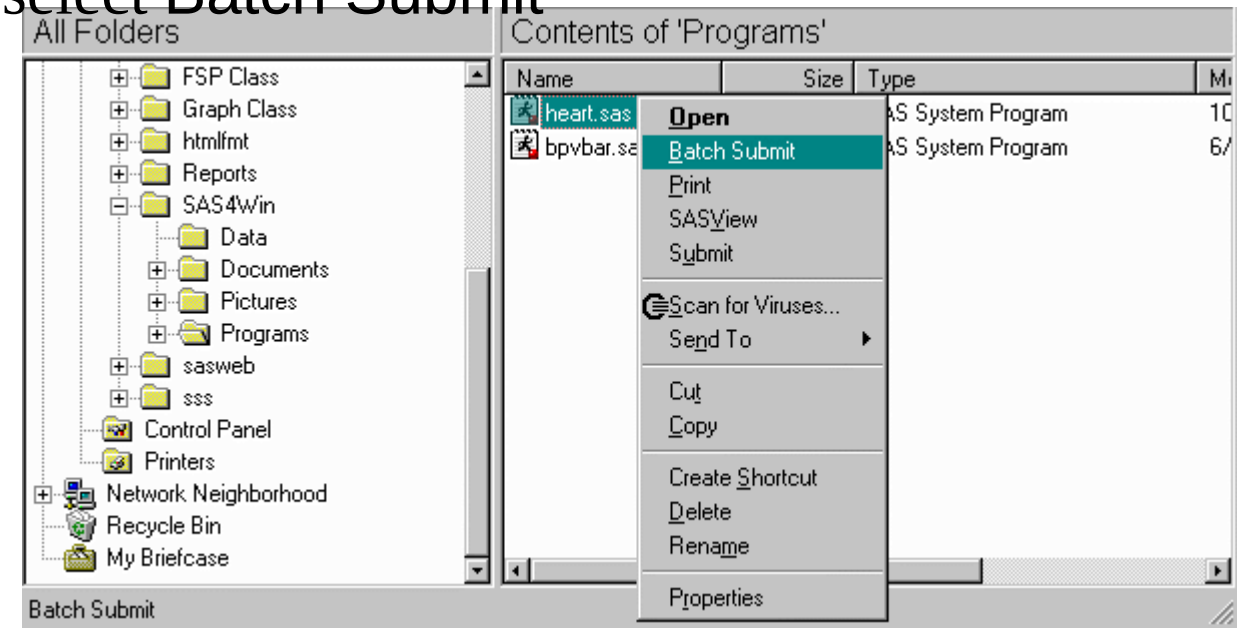
- Call 301-594-3278
- Visit the CIT Technical Information Office at 12A/1011
- Use Wylbur's ENTER PUBWARE
- Visit the Web site

  http://www.cit.nih.gov

The software is available only to DHHS personnel. There is a $600 yearly charge.

Run SAS in Batch Mode

- open the Windows Explorer or File Manager
- press the right mouse button over the program name
- select Batch Submit

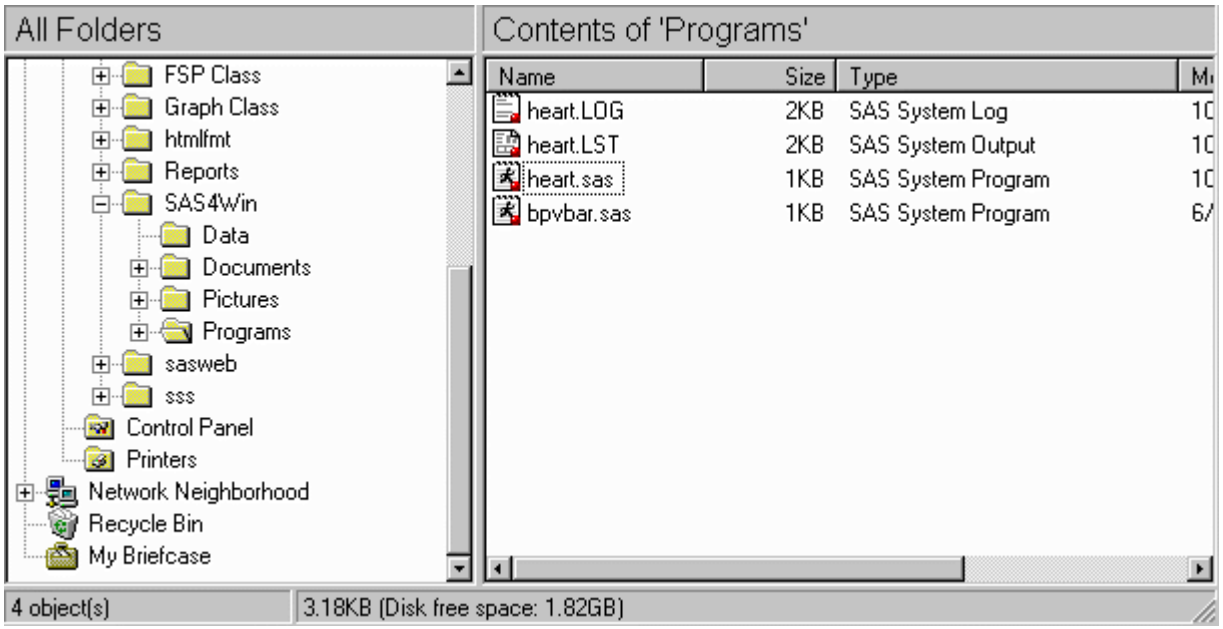


Run SAS in Batch Mode (continued)

Two files will be created:

pgmname`.LOG` contains notes, warnings, and/or errors

pgmname`.LST` contains the results of your procedures



Invoking the SAS Display Manager

- **Windows 3.1**

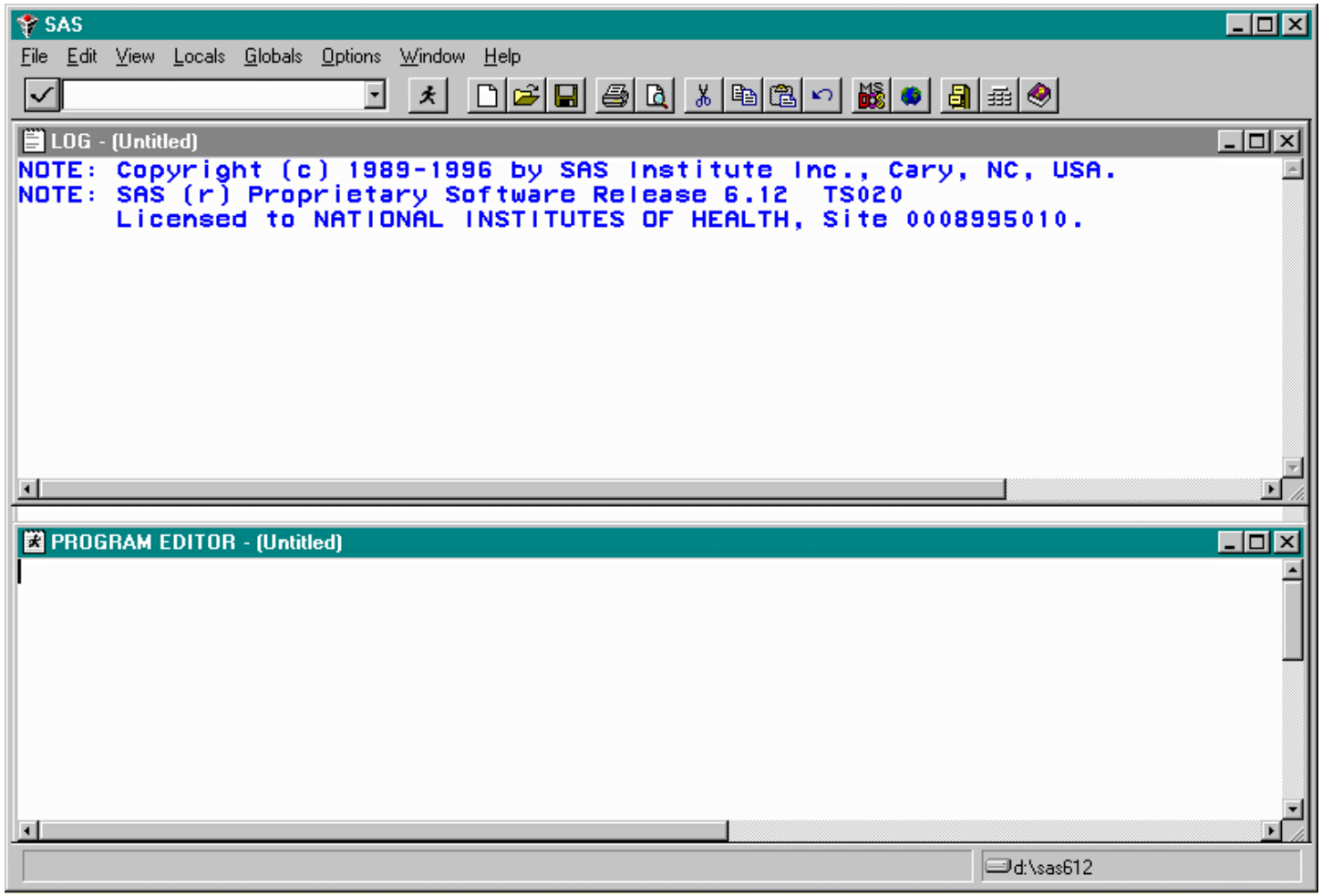
  From the Program Manager, double-click on the SAS icon.

- **Windows 95 & NT**

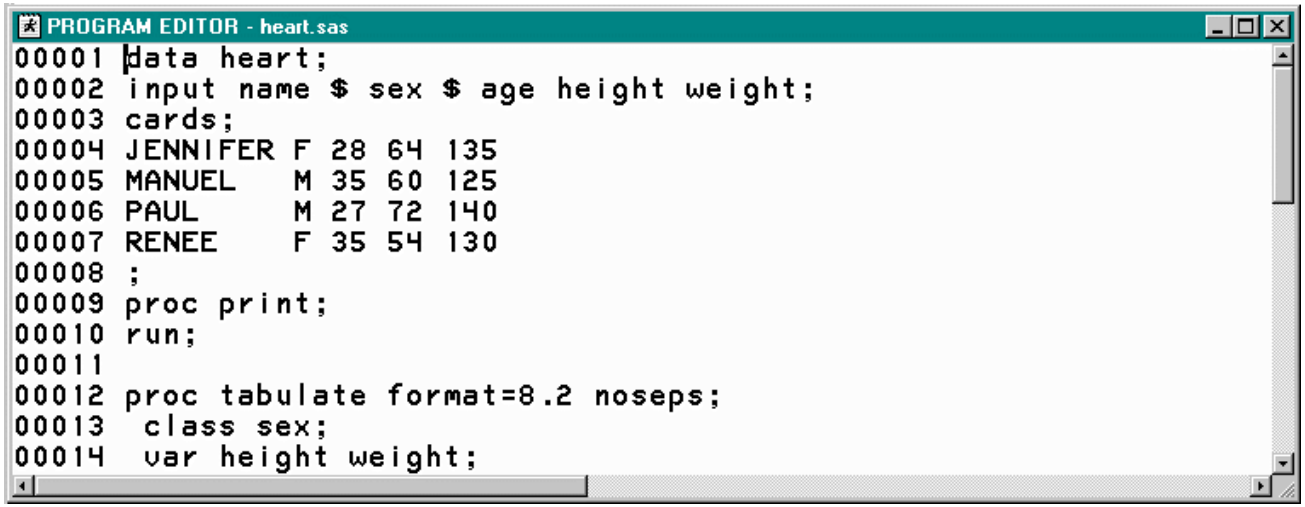
  From the Start button, choose Programs then The SAS System then The SAS System for Windows 6.12, or,

  Create a shortcut icon then double-click on it.

The SAS Display Manager



The Program Editor Window



- Create new program. Select Save As from the File menu to save the program.
- Select Open from the File menu to include existing programs
- Modify programs using SAS's text editor
- Can highlight subset of statements to run
- Select Recall text from the Locals menu to recall statements submitted earlier

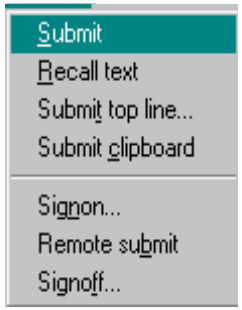
Editing Tools
Moving the cursor

Home	to start of current line
End	to end of current line
PgUp	one page up
PgDn	one page down
Ctrl PgUp	to top of program
Ctrl PgDn	to bottom of program
Ctrl ->	one word to the right
Ctrl <-	one word to the left

Editing Tools
Selecting Text

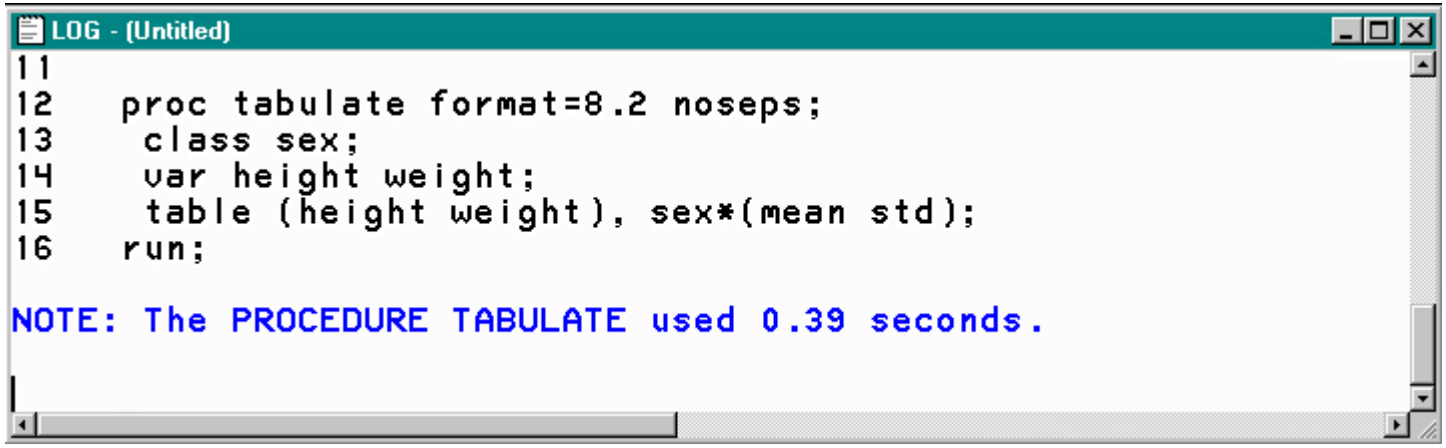
Ctrl U	unmark
Shf Ctrl ->	select to end of word
Shf Ctrl <-	select to start of word
Shf down-arrow	select various lines
Shf End	select to end of line
Shf Home	select to start of line
Shf Ctrl PgUp	select to top of program
Shf Ctrl PgDn	select to bottom of program
Alt Mouse	**select rectangular area**
	(press ALT as you drag mouse)
Shf Mouse	**select to where you click**

Running Programs in the Display Manager



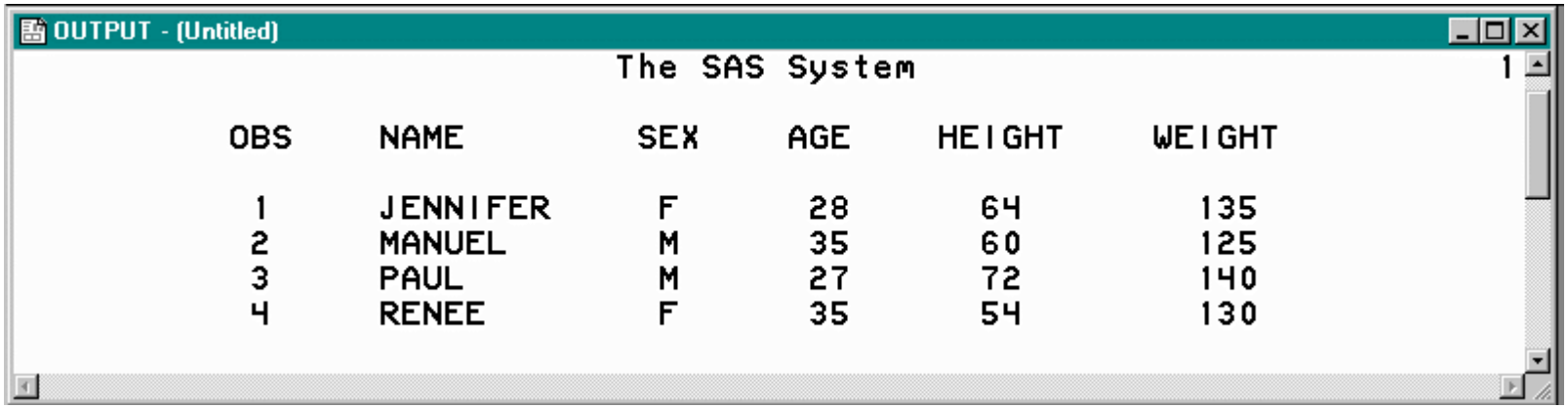
- Select Submit from the Locals menu
- Click on the tool button
- Press the F8 key
- Highlight some statements then run them with any of the methods listed above

The LOG Window



- View notes, warnings and errors that SAS generates after running the program

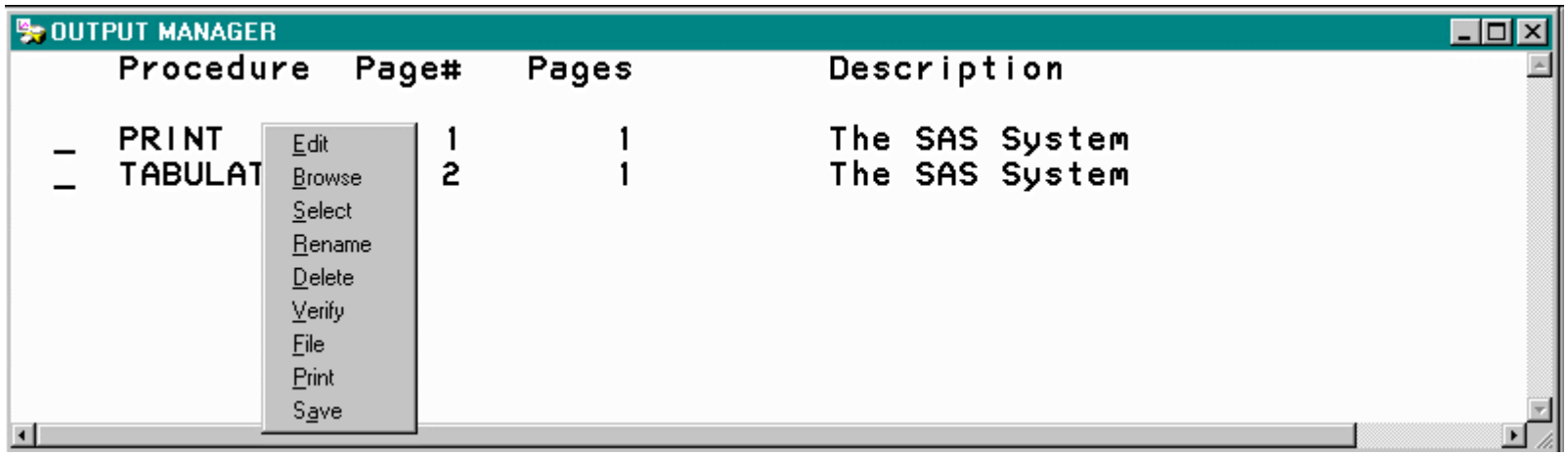
The OUTPUT Window



- View the results of your SAS program
- From the File menu select:
  - Save As to save the results in a file
  - Print Preview to preview the printed output
  - Print to send results to a printer

The OUTPUT Manager Window

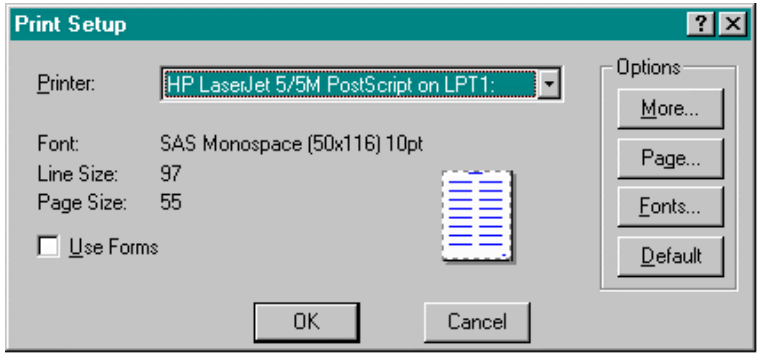
- Select Present from the Globals menu then select View output
- Or, enter MANAGER on the command box
- Press the right mouse button for menu

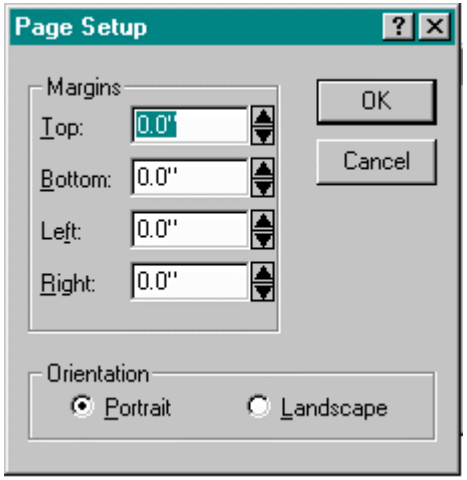


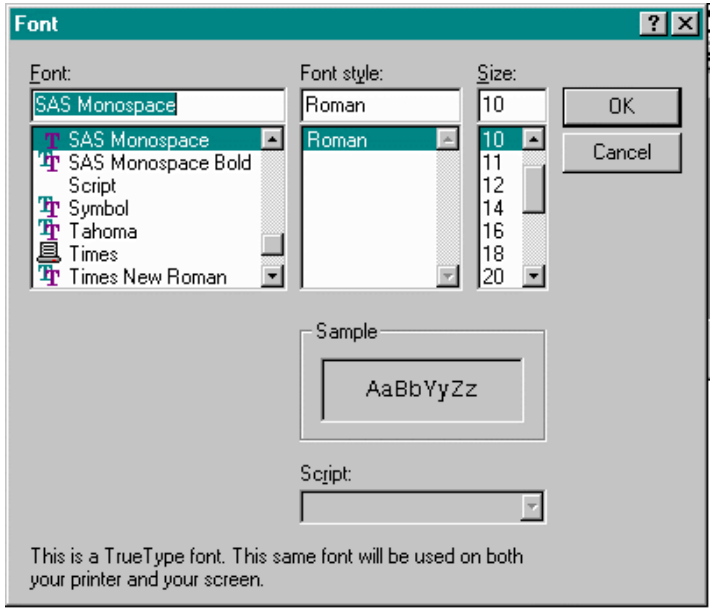
The Print Setup Window

Use it to change:

- line size and page size
- font name, style and size
- margins and orientation







Copying Text to Other Applications

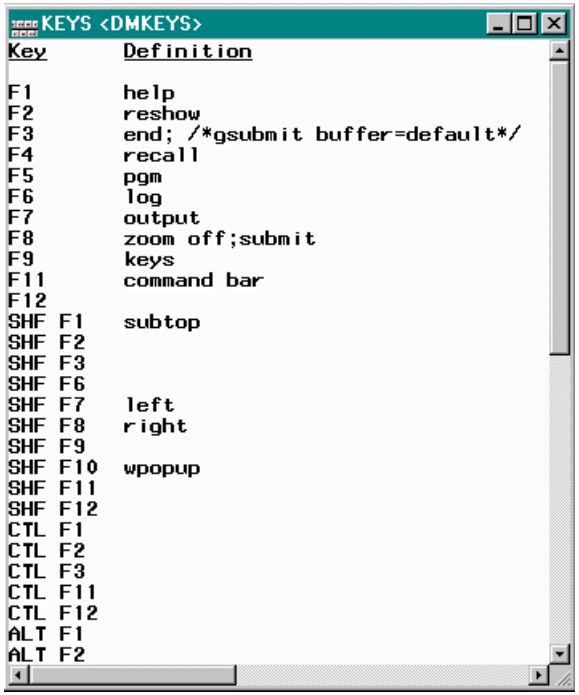
To copy text between a SAS text window and a Windows application:

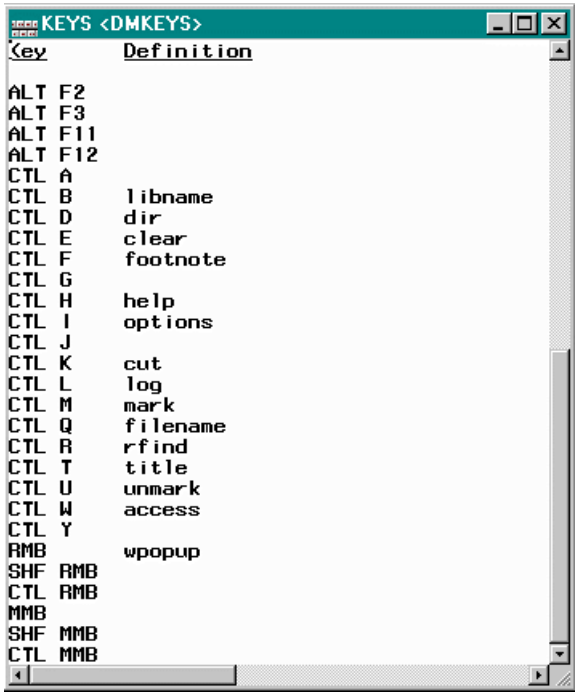
1. mark the area you want to copy
2. with the left mouse button, drag it to the target application,

   or, choose Copy from the Edit menu, then from the target application choose Paste from the Edit menu.

The KEYS Window

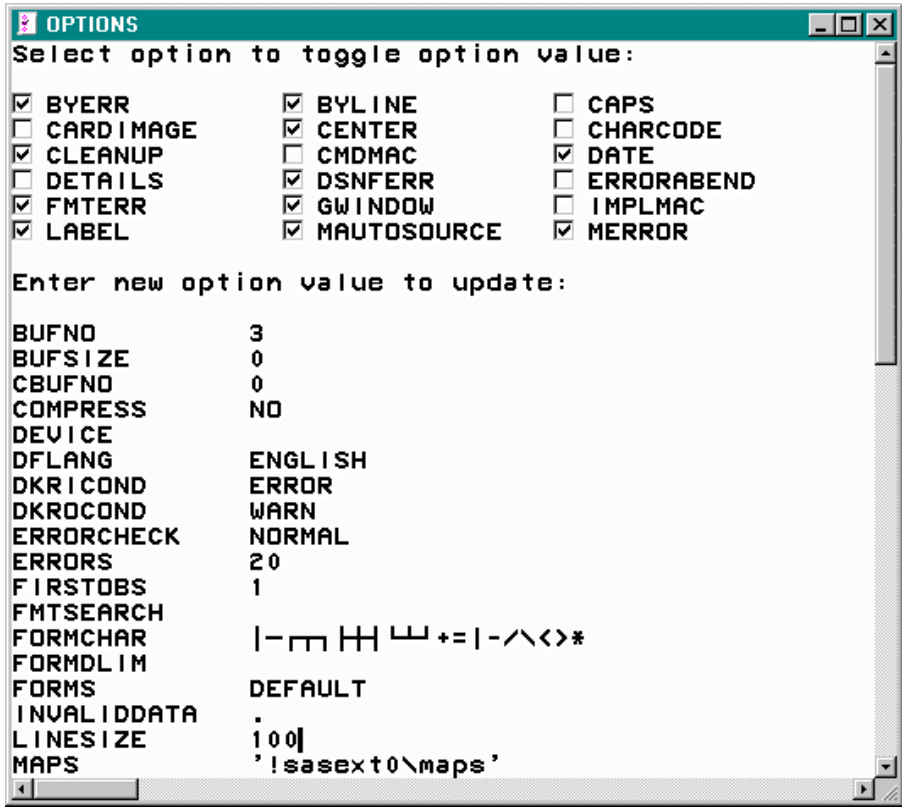
- Select Keys from the Help menu to view the Keys window
- You can view or change the settings of the keys





The OPTIONS Window

- Select Options from the Globals menu then select Global Options
- View and/or modify the options

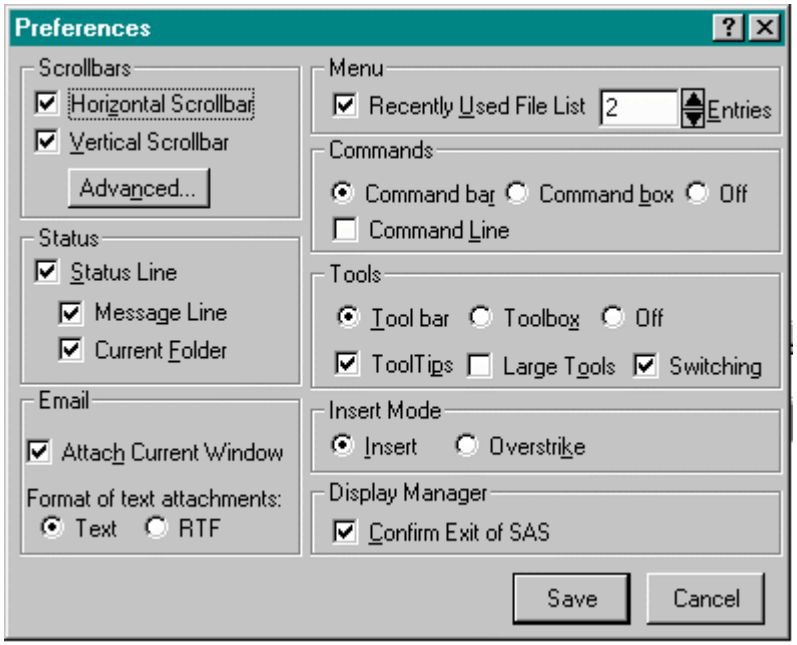


Customizing the Workspace

- To add **line numbers** to the PGM window, select Options from the Edit menu then select Numbers
- To change any **colors** in the workspace, select Options from the Globals menu then select Color Setup
- To change the **font** displayed, select Fonts from the Options menu
- To **save the settings** permanently, select Save settings now from the Options menu for each window you changed

The Preferences Dialog Window

- Open it by selecting Preferences from the Options menu
- Use it to:
  - remove scrollbars
  - remove status line items
  - modify the tool bar
  - modify command box
- Press Save to save the changes permanently



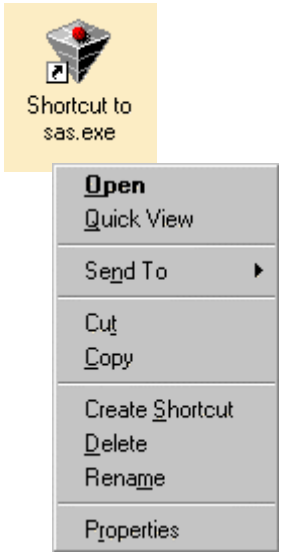
The Working Directory

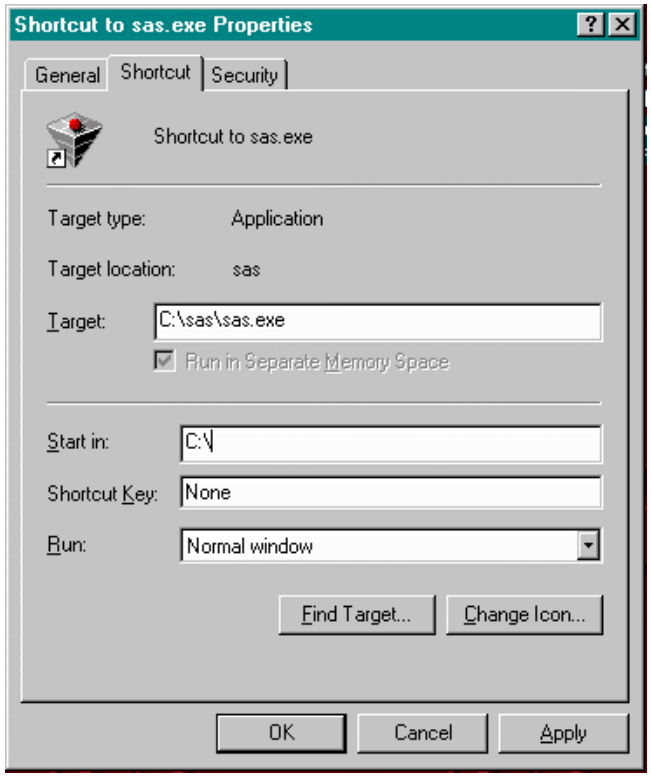
- Specifies the directory from which to open programs and where to save them
- To change it for the current session:
  - double-click on the current directory area

  - choose the directory from the Change Folder window

Changing the Working Directory Permanently

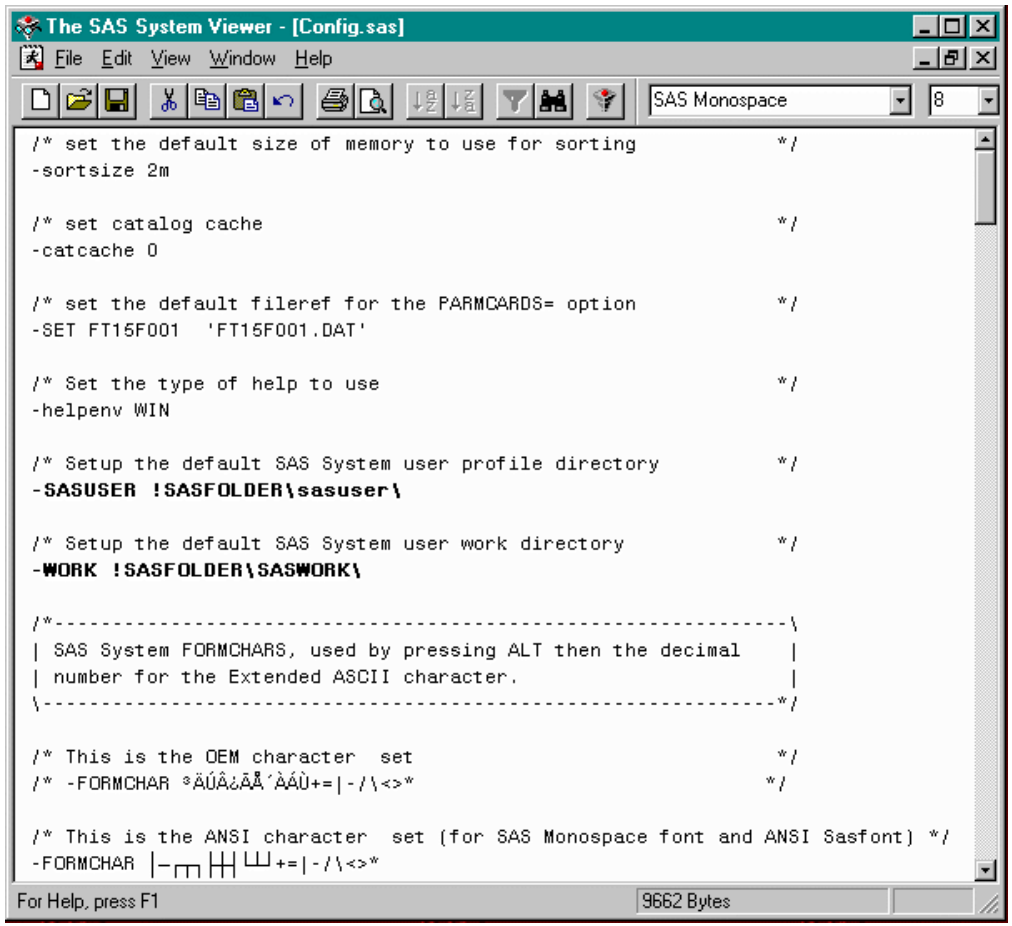
- Create a shortcut of the SAS icon
- Right-click once on the shortcut icon
- Select Properties
- Type the working directory in Start in
- Press OK





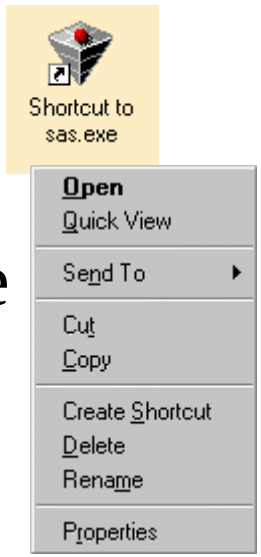
The CONFIG.SAS File

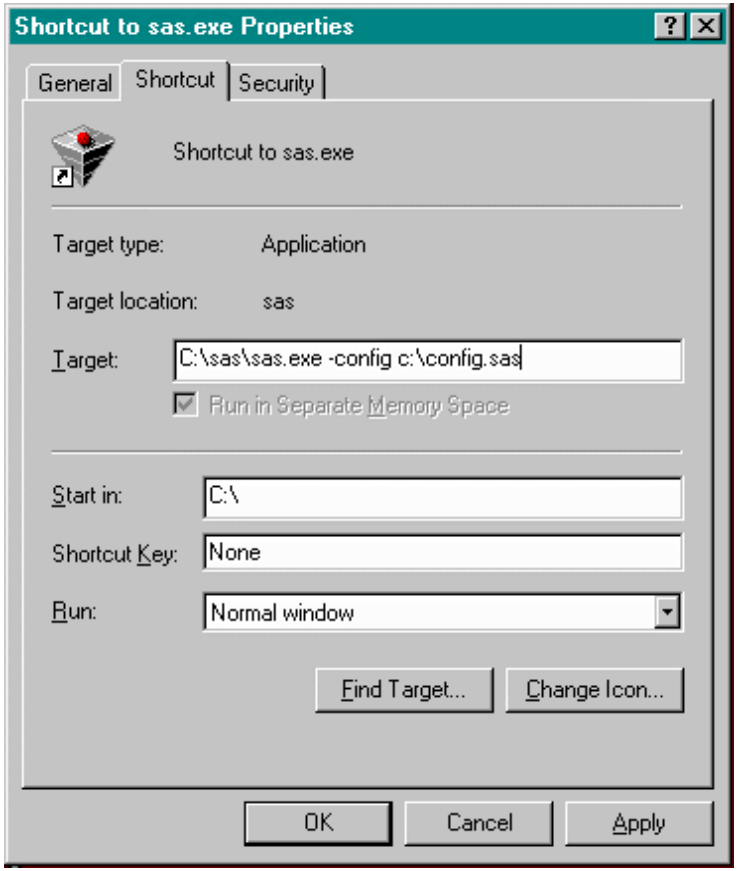
- Specifies SAS system options to set when SAS is invoked
- Is located in the SAS root directory
- Can be modified by user and copied to a different location



The CONFIG.SAS File (continued)

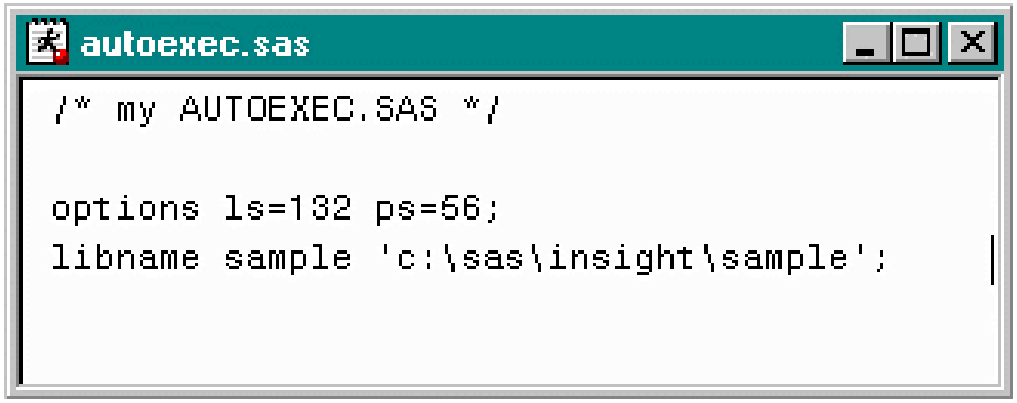
- To specify which CONFIG.SAS file to use open the Properties window
- In the Target box use the -config option followed by the location and name of the file
- Press OK





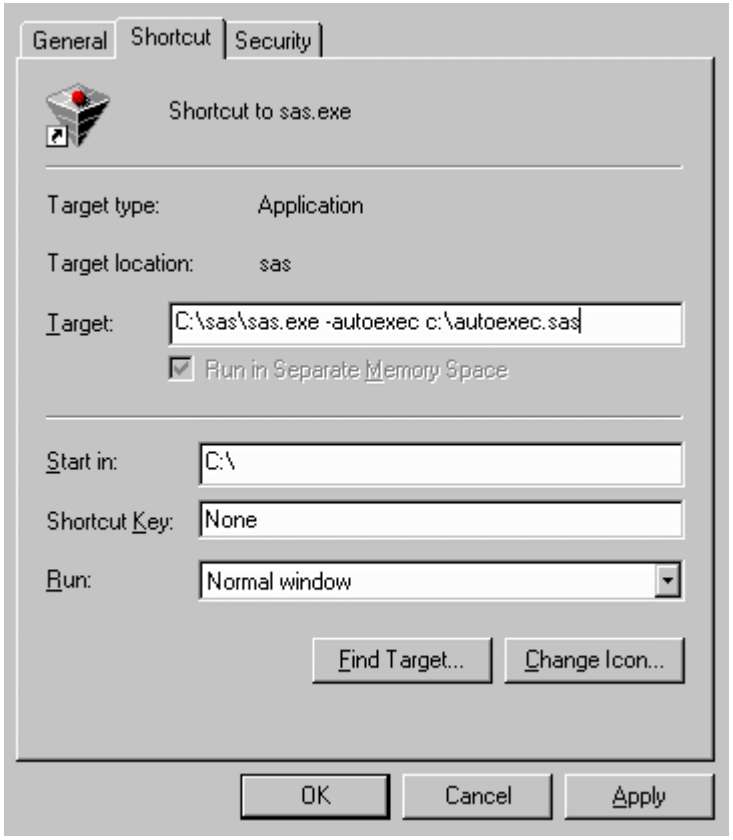
The AUTOEXEC.SAS File

- Specifies SAS statements to run automatically when SAS starts
- Create it with a text editor



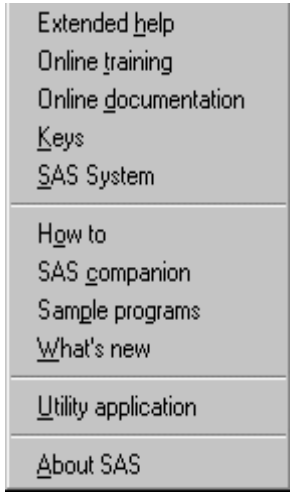
The AUTOEXEC.SAS File (continued)

- To specify which AUTOEXEC.SAS file to use open the Properties window
- In the Target box use the -autoexec option followed by the location and name of the file
- Press OK

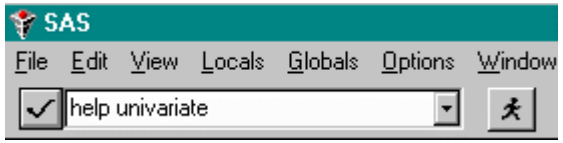


Getting Help

- With the Help menu you can get help:
  - for all the licensed SAS products
  - from the online documentation including the “Companion”
  - for FAQs
  - about what’s new in the current release

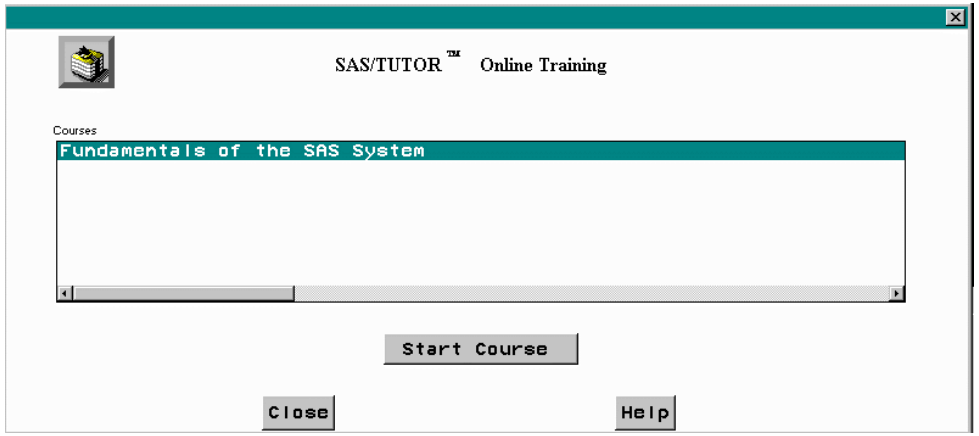


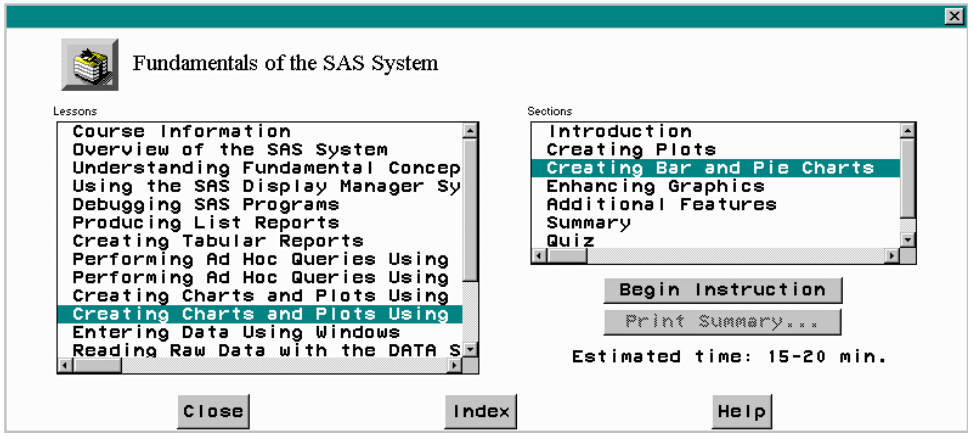
- You can use the HELP command in the command window to get help for a specific subject



Online Training (SAS/TUTOR)

- Select Online training from the Help menu
- Select course to view then Start Course
- Select lesson to view then Begin Instruction



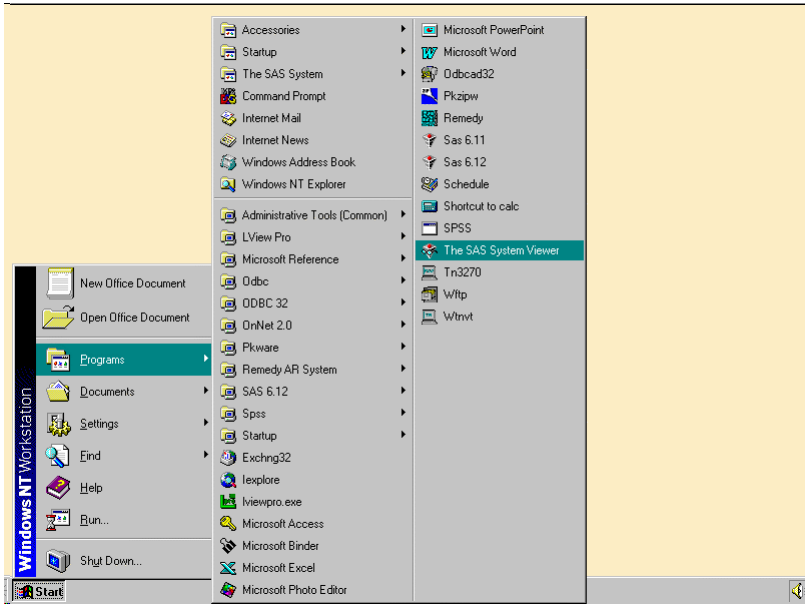


The SAS System Viewer

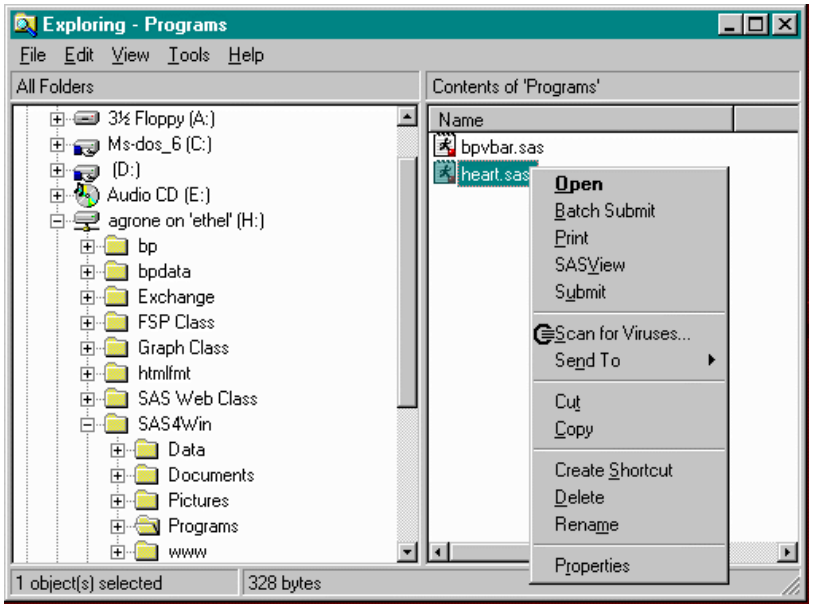
- Used to view:
  - SAS programs, output listings (.LST files), log files (.LOG files), text files (.TXT files), rich text format files (.RTF files)
  - SAS data sets (6.04 and up, Windows, OS/2, DOS)
  - SAS catalogs (Windows, OS/2)
  - JMP files
- Can freely distribute to anyone even if the person does not have SAS licensed
- Independent from the SAS Software
- Can be used from the Explorer or by opening the application directly
- Available at SAS's web site (www.sss.com) in the download section of the technical support page.

The SAS System Viewer (continued)

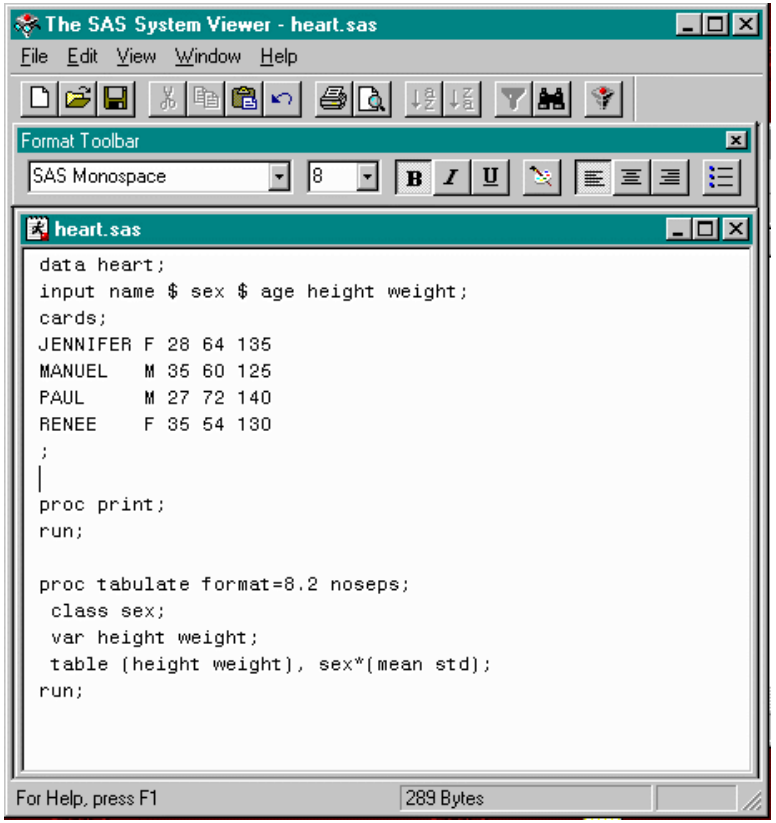
From Start Button

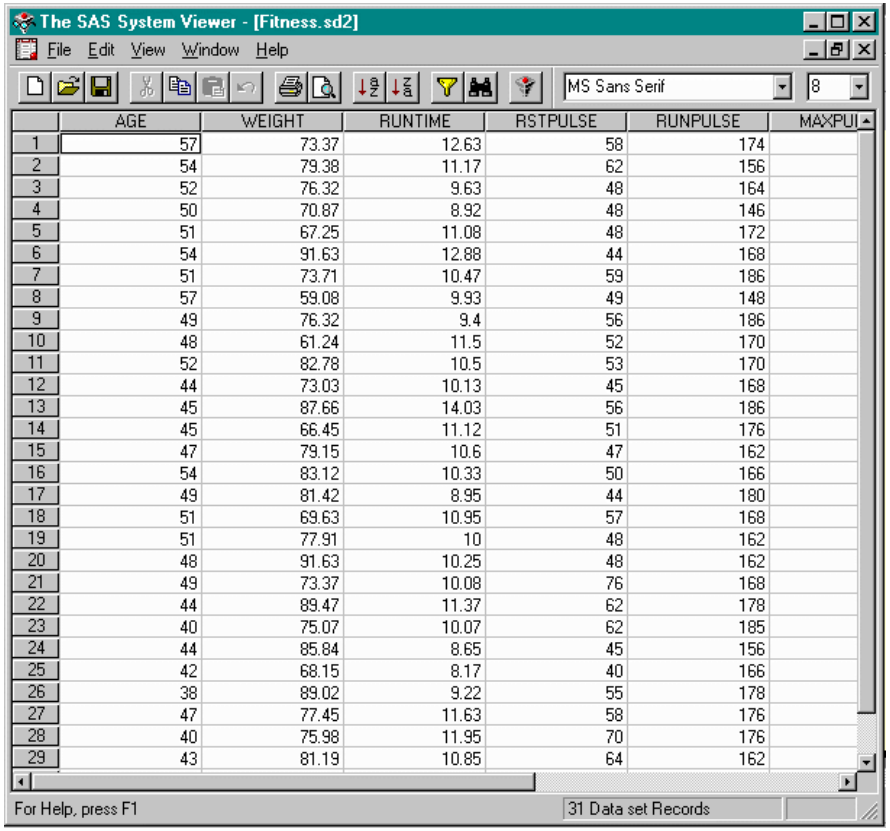


From the Explorer



Viewing Programs and Data





	AGE	WEIGHT	RUNTIME	RSTPULSE	RUNPULSE	MAXPUL
1	57	73.37	12.63	58	174	
2	54	79.38	11.17	62	156	
3	52	76.32	9.63	48	164	
4	50	70.87	8.92	48	146	
5	51	67.25	11.08	48	172	
6	54	91.63	12.88	44	168	
7	51	73.71	10.47	59	186	
8	57	59.08	9.93	49	148	
9	49	76.32	9.4	56	186	
10	48	61.24	11.5	52	170	
11	52	82.78	10.5	53	170	
12	44	73.03	10.13	45	168	
13	45	87.66	14.03	56	186	
14	45	66.45	11.12	51	176	
15	47	79.15	10.6	47	162	
16	54	83.12	10.33	50	166	
17	49	81.42	8.95	44	180	
18	51	69.63	10.95	57	168	
19	51	77.91	10	48	162	
20	48	91.63	10.25	48	162	
21	49	73.37	10.08	76	168	
22	44	89.47	11.37	62	178	
23	40	75.07	10.07	62	185	
24	44	85.84	8.65	45	156	
25	42	68.15	8.17	40	166	
26	38	89.02	9.22	55	178	
27	47	77.45	11.63	58	176	
28	40	75.98	11.95	70	176	
29	43	81.19	10.85	64	162	

Reading Raw Data

To read raw (external) data, include the name and location of the data file in the INFILE statement. For example, to read the data C:\STUDY\HEART.DAT you could write a program like this:

```
data heart;
 infile 'c:\study\heart.dat';
 input ...;
run;
```

Accessing SAS Data Sets

You can view or create new SAS files by using:

- the LIBNAME statement, or
- the Libraries window

The LIBNAME Statement

The syntax of the LIBNAME statement is:

```
libname libref 'directory';
```

directory is the directory where the data resides or will reside and *libref* is a word you choose to identify that directory within SAS. The *libref* must start with a letter or an underscore and include a maximum of eight characters.

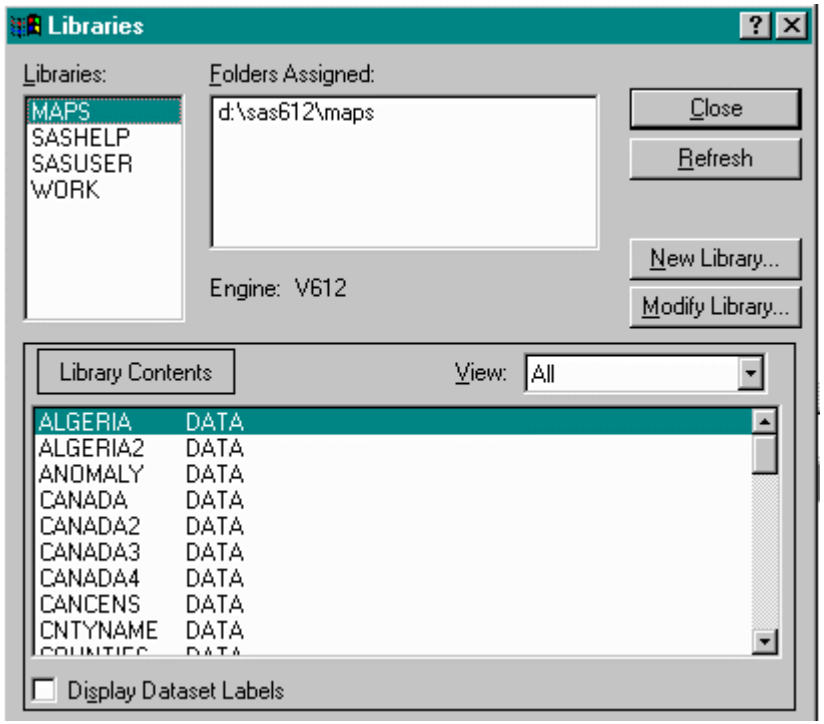
LIBNAME Statement Example

The following program reads data from a SAS data set called DRUG that is located in the directory `c:\sas\insight\sample.`

```
libname sample 'c:\sas\insight\sample';
proc means data=sample.drug;
 var chang_bp;
run;
```

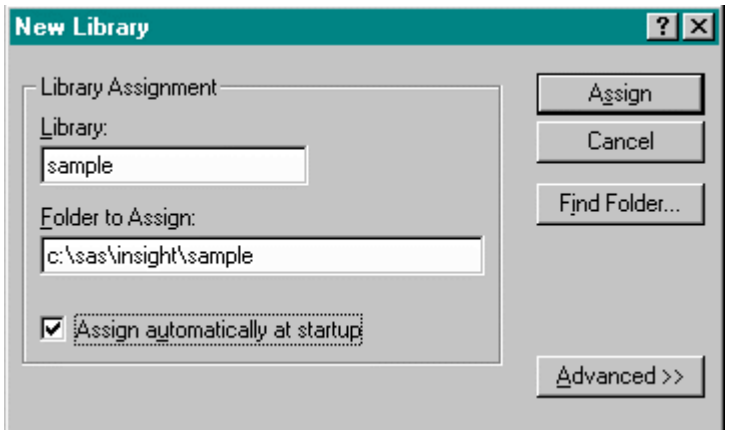
The Libraries Window

- To view or create new library references (*libref*) select Access from the Globals menu then select Display libraries



Creating a New Library

- Select New Library to create a new *libref*
- Enter a *libref* in the Library box
- Enter the directory name in the Folder box
- Click on the box for Assign automatically at startup to assign the *libref* at startup

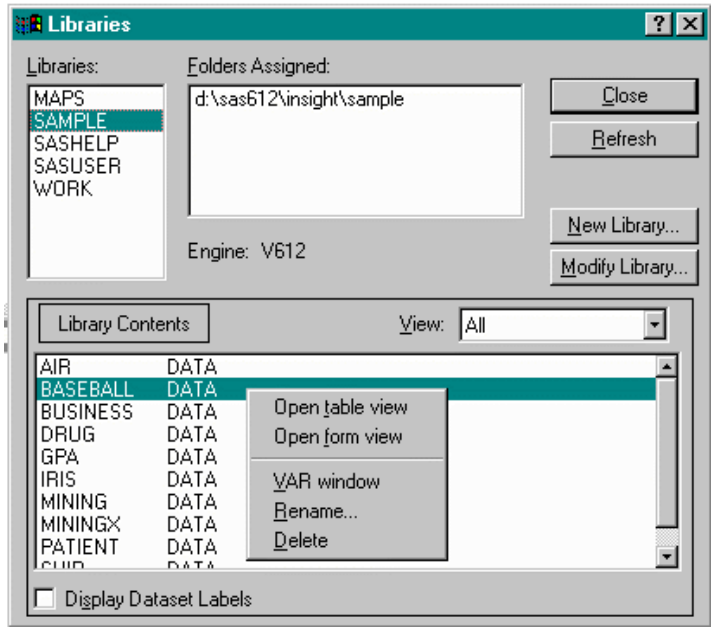


The above window is equivalent to submitting the statement:

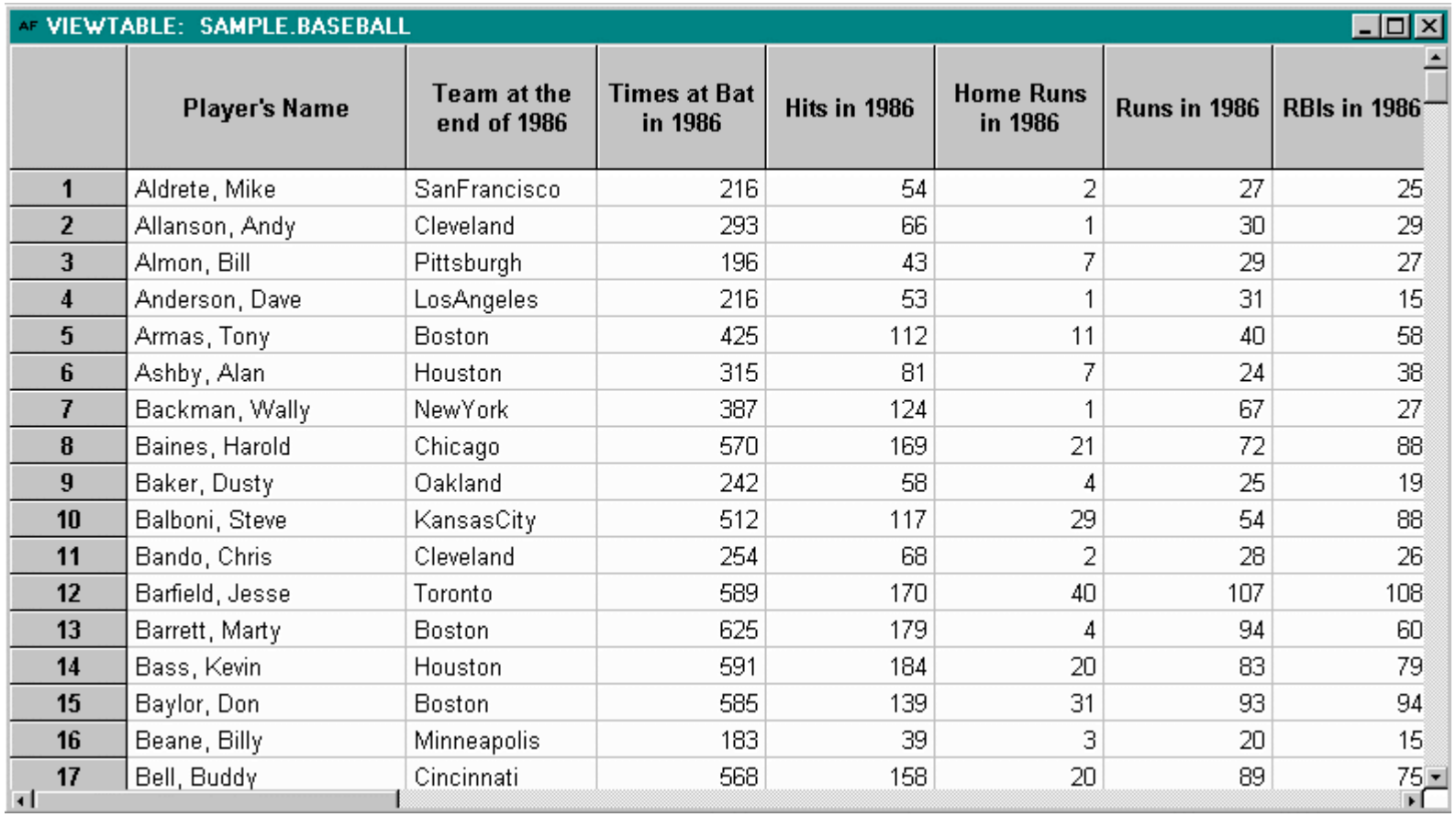
```
libname sample 'c:\sas\insight\sample';
```

Browsing and Editing Data with the VIEWTABLE Window

- On the Libraries window, click on the right mouse button to:
  - open data set in table or form mode
  - go to the VAR window
  - rename a SAS file
  - delete a SAS file
- Or, from the Globals menu select Manage then select Open table
- SAS/FSP is required to edit or sort a table, or to use form view mode

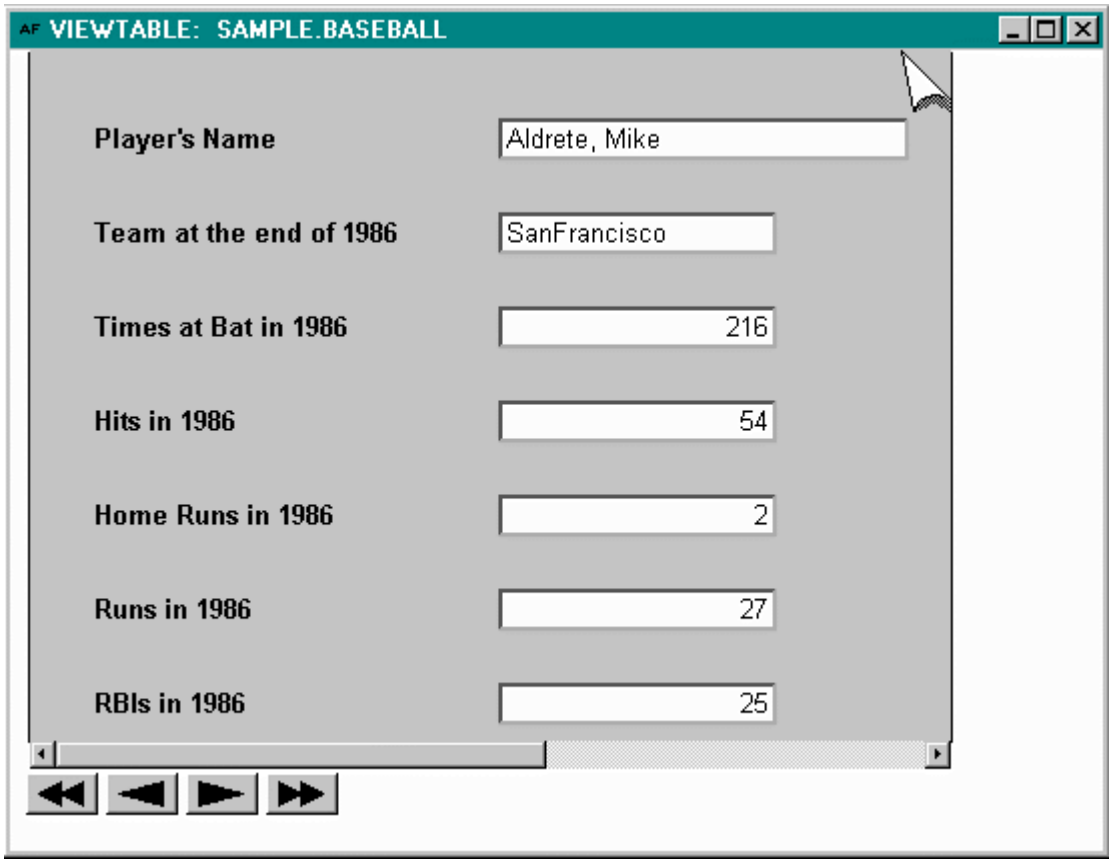


VIEWTABLE: Table Mode


VIEWTABLE: SAMPLE.BASEBALL

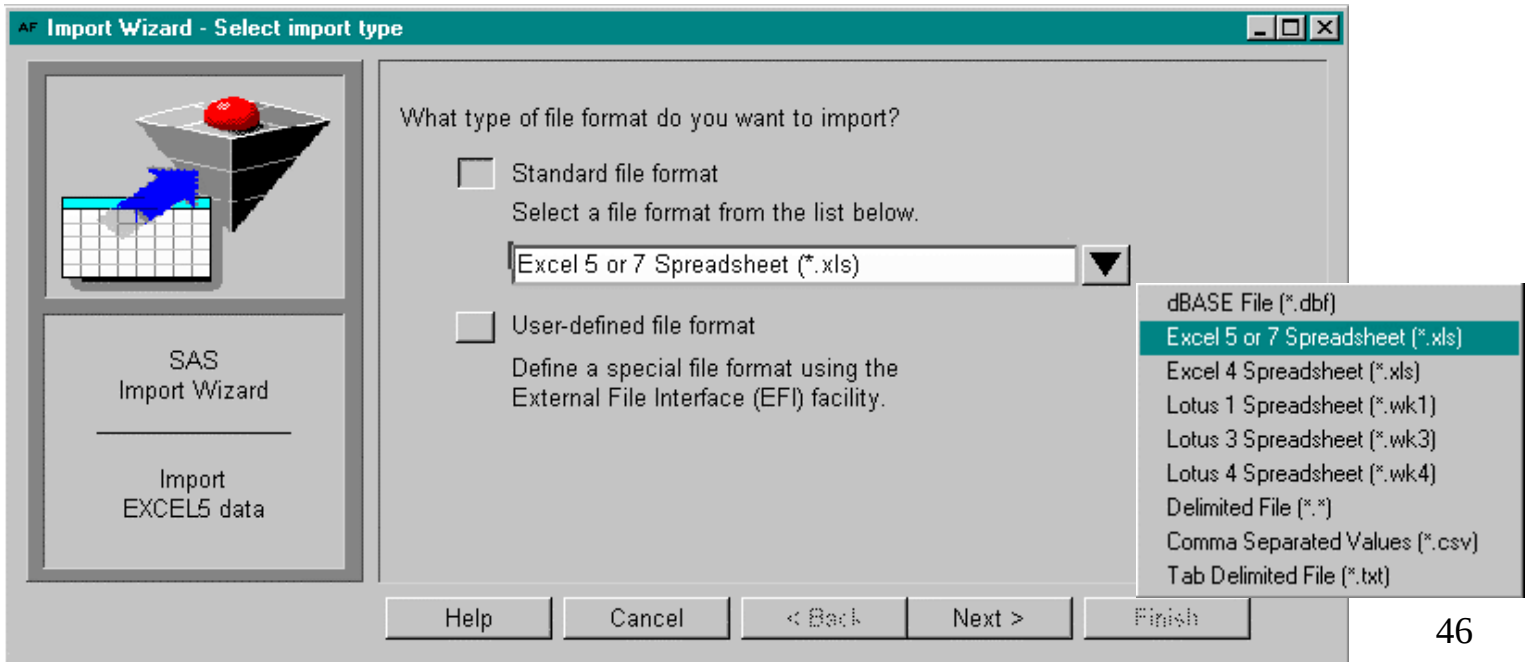
	Player's Name	Team at the end of 1986	Times at Bat in 1986	Hits in 1986	Home Runs in 1986	Runs in 1986	RBIs in 1986
1	Aldrete, Mike	SanFrancisco	216	54	2	27	25
2	Allanson, Andy	Cleveland	293	66	1	30	29
3	Almon, Bill	Pittsburgh	196	43	7	29	27
4	Anderson, Dave	LosAngeles	216	53	1	31	15
5	Armas, Tony	Boston	425	112	11	40	58
6	Ashby, Alan	Houston	315	81	7	24	38
7	Backman, Wally	NewYork	387	124	1	67	27
8	Baines, Harold	Chicago	570	169	21	72	88
9	Baker, Dusty	Oakland	242	58	4	25	19
10	Balboni, Steve	KansasCity	512	117	29	54	88
11	Bando, Chris	Cleveland	254	68	2	28	26
12	Barfield, Jesse	Toronto	589	170	40	107	108
13	Barrett, Marty	Boston	625	179	4	94	60
14	Bass, Kevin	Houston	591	184	20	83	79
15	Baylor, Don	Boston	585	139	31	93	94
16	Beane, Billy	Minneapolis	183	39	3	20	15
17	Bell, Buddy	Cincinnati	568	158	20	89	75

VIEWTABLE: Form Mode



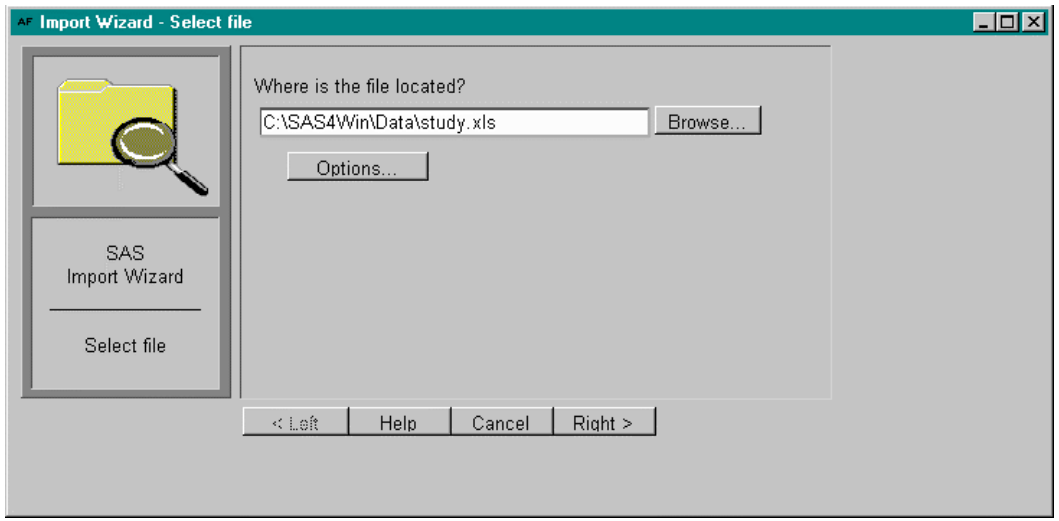
Importing Data into SAS

- Under release 6.12 you can import data by selecting Import from the File menu. This feature is part of Base SAS and the SAS/ACCESS for PC File Formats product.
- Select the format of your file from the dialog window

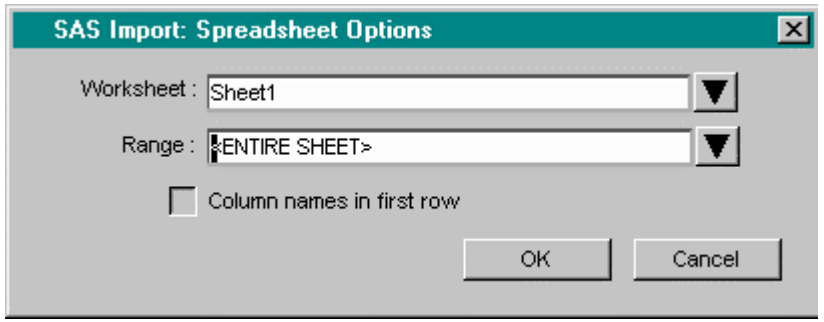


Importing Data (continued)

- Specify the location and name of the file
- Press Options if needed

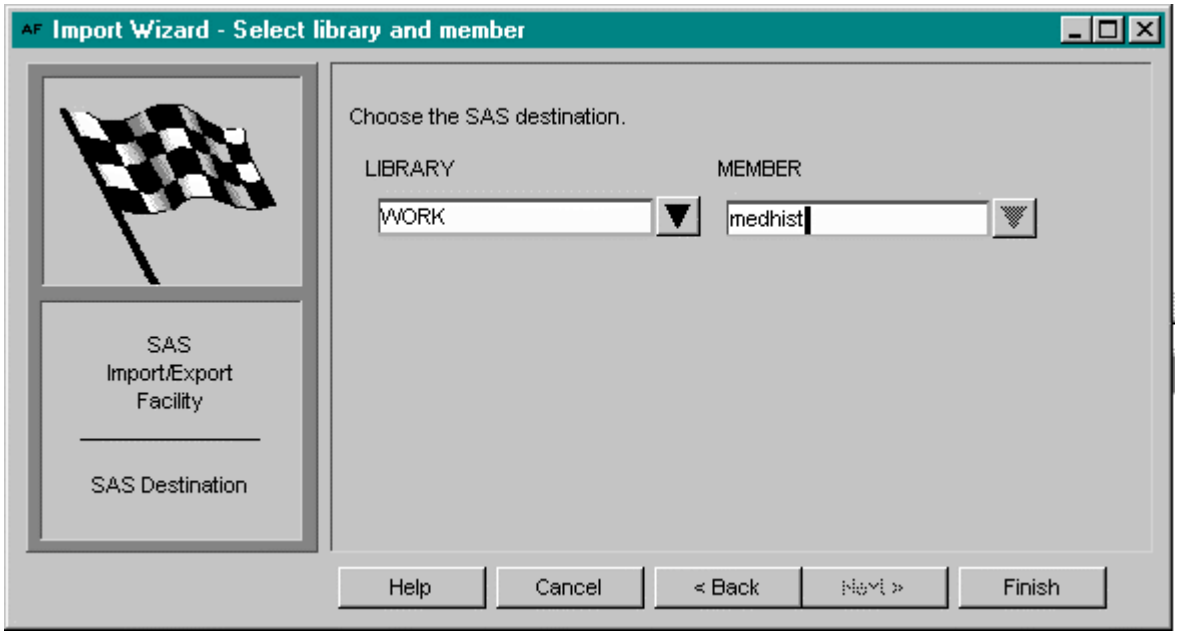


- Select the worksheet
- Specify if the column names are in the first row. A raised box means they are not.



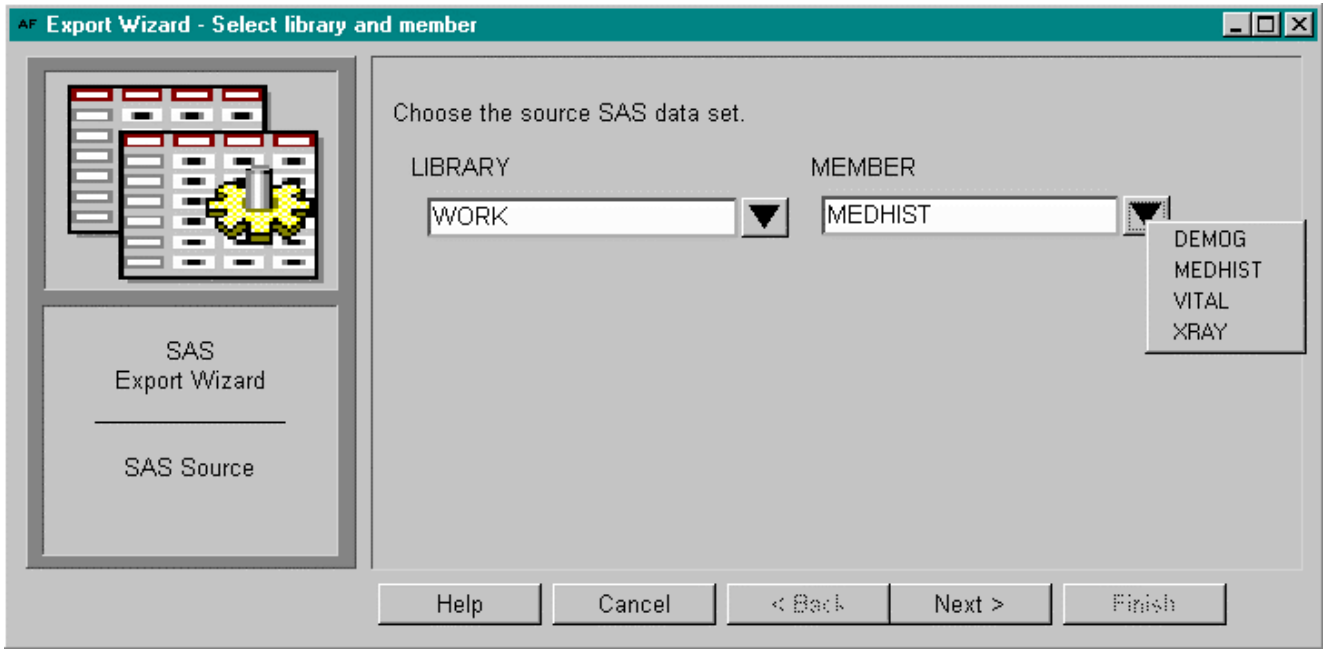
Importing Data (continued)

- Select the SAS library and member name where the SAS data set will be saved
- Press Finish to convert the file to SAS



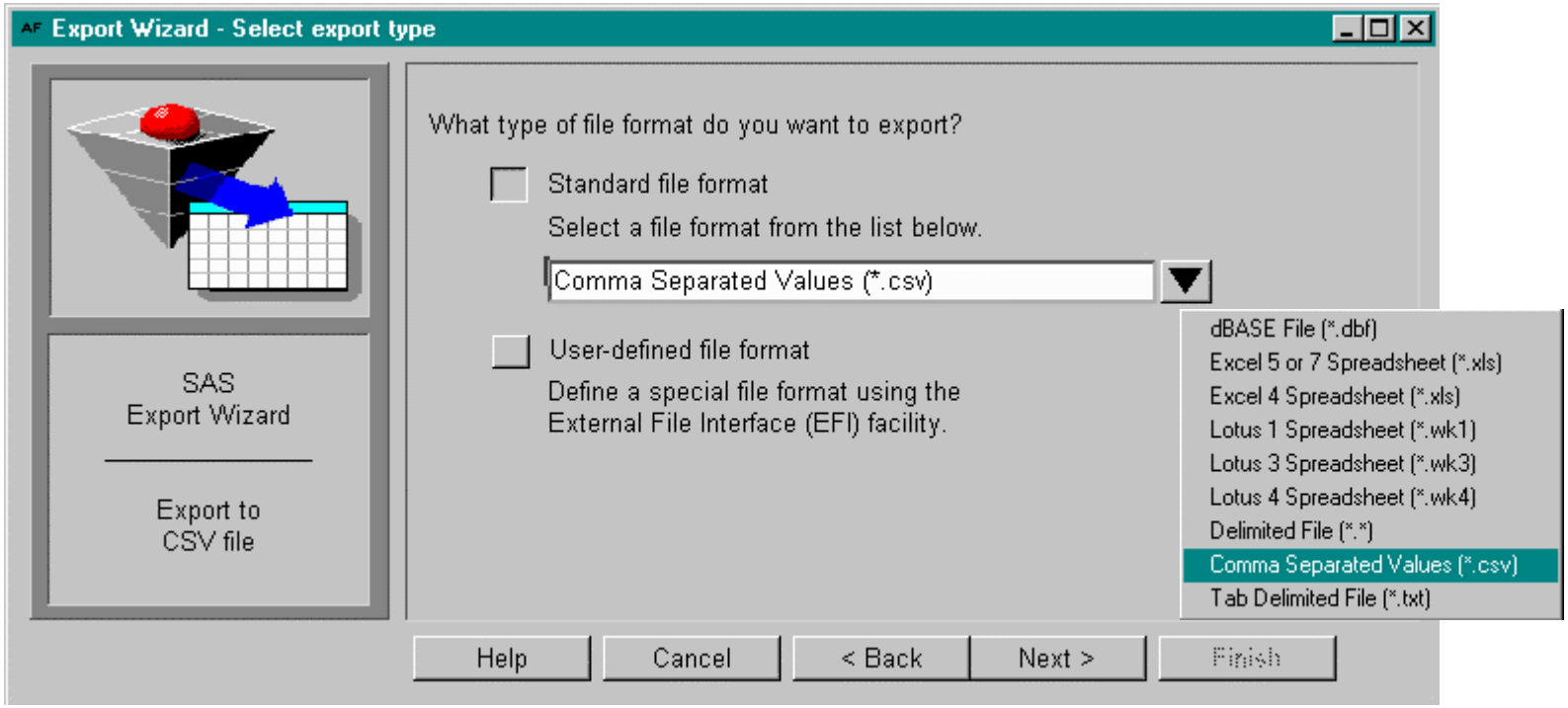
Exporting Data from SAS

- To export data from SAS, select Export from the File menu. This feature is part of Base SAS and the SAS/ACCESS for PC File Formats products.
- Select the SAS data set to export then press Next.



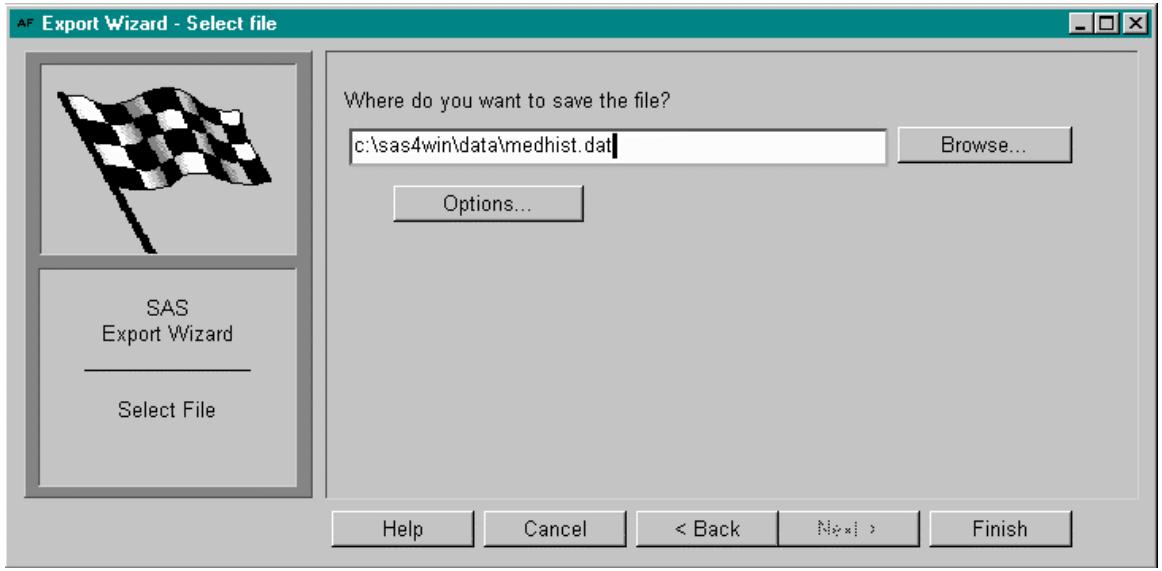
Exporting Data (continued)

- Select the file format to which to export the data set then press Next.



Exporting Data (continued)

- Specify the location and name for the file
- If needed, press Options to specify a delimiter (default=comma)
- Press Finish to convert the file

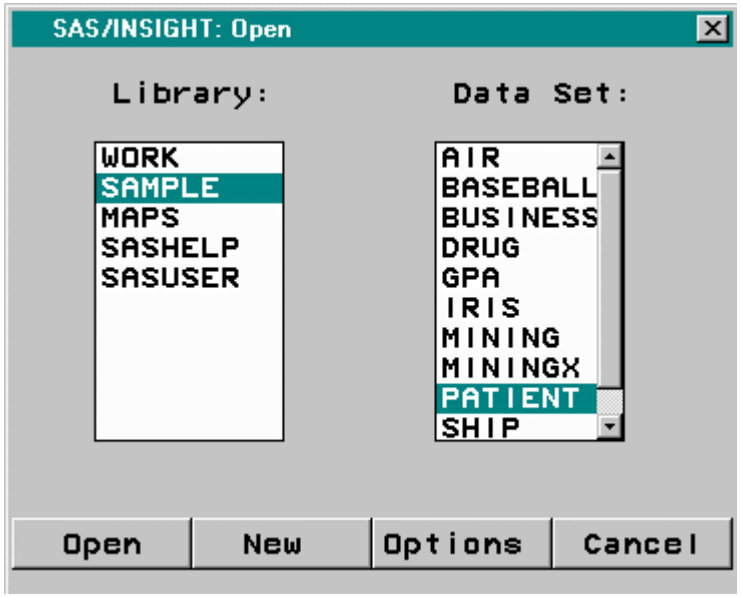


SAS/INSIGHT

An interactive tool for data exploration using interactive graphs, analysis of variance, regression, the generalized linear model and other statistical methods.

To invoke:

- Select Analyze from the Globals menu then select Interactive Statistical Analysis
- Or, enter INSIGHT in the command box
- Select the data set to open



SAS/INSIGHT (continued)

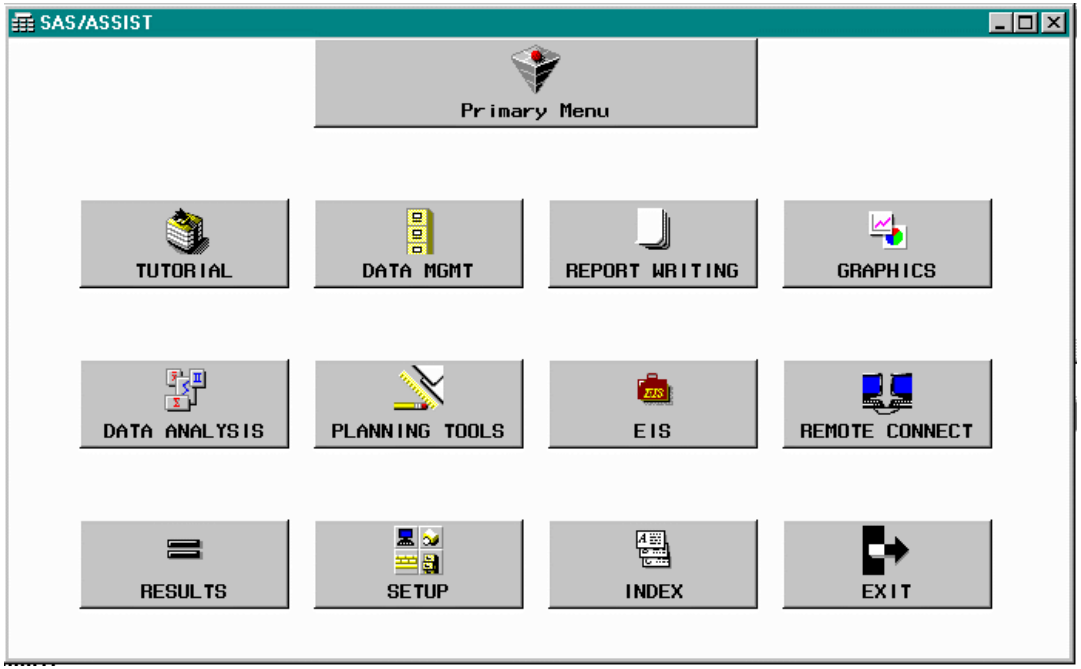
- Select tasks from the menus

SAMPLE.PATIENT

27	REMISS	CELL	SMEAR	INFIL	LI	BLAST	TEMP
	Int	Int	Int	Int	Int	Int	Int
1	1	0.80	0.83	0.66	1.9	1.100	0.996
2	1	0.90	0.36	0.32	1.4	0.740	0.992
3	0	0.80	0.88	0.70	0.8	0.176	0.982
4	0	1.00	0.87	0.87	0.7	1.053	0.986
5	1	0.90	0.75	0.68	1.3	0.519	0.980
6	0	1.00	0.65	0.65	0.6	0.519	0.982
7	1	0.95	0.97	0.92	1.0	1.230	0.992
8	0	0.95	0.87	0.83	1.9	1.354	1.020
9	0	1.00	0.45	0.45	0.8	0.322	0.999
10	0	0.95	0.36	0.34	0.5	0.000	1.038
11	0	0.85	0.39	0.33	0.7	0.279	0.988
12	0	0.70	0.76	0.53	1.2	0.146	0.982
13	0	0.80	0.46	0.37	0.4	0.380	1.006
14	0	0.20	0.39	0.08	0.8	0.114	0.990

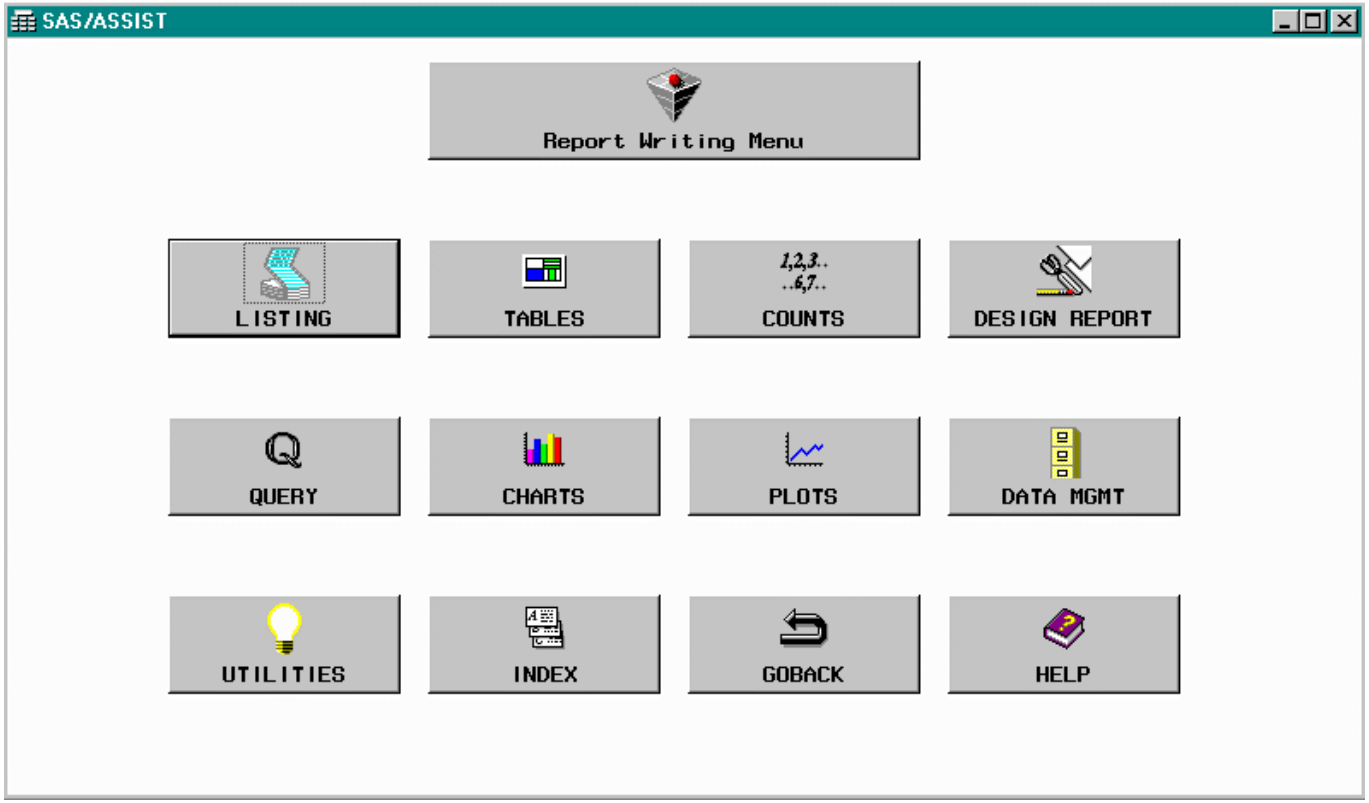
SAS/ASSIST

- Lets you run SAS by selecting tasks from menus and by point and click
- To invoke it select SAS/ASSIST from the Globals menu



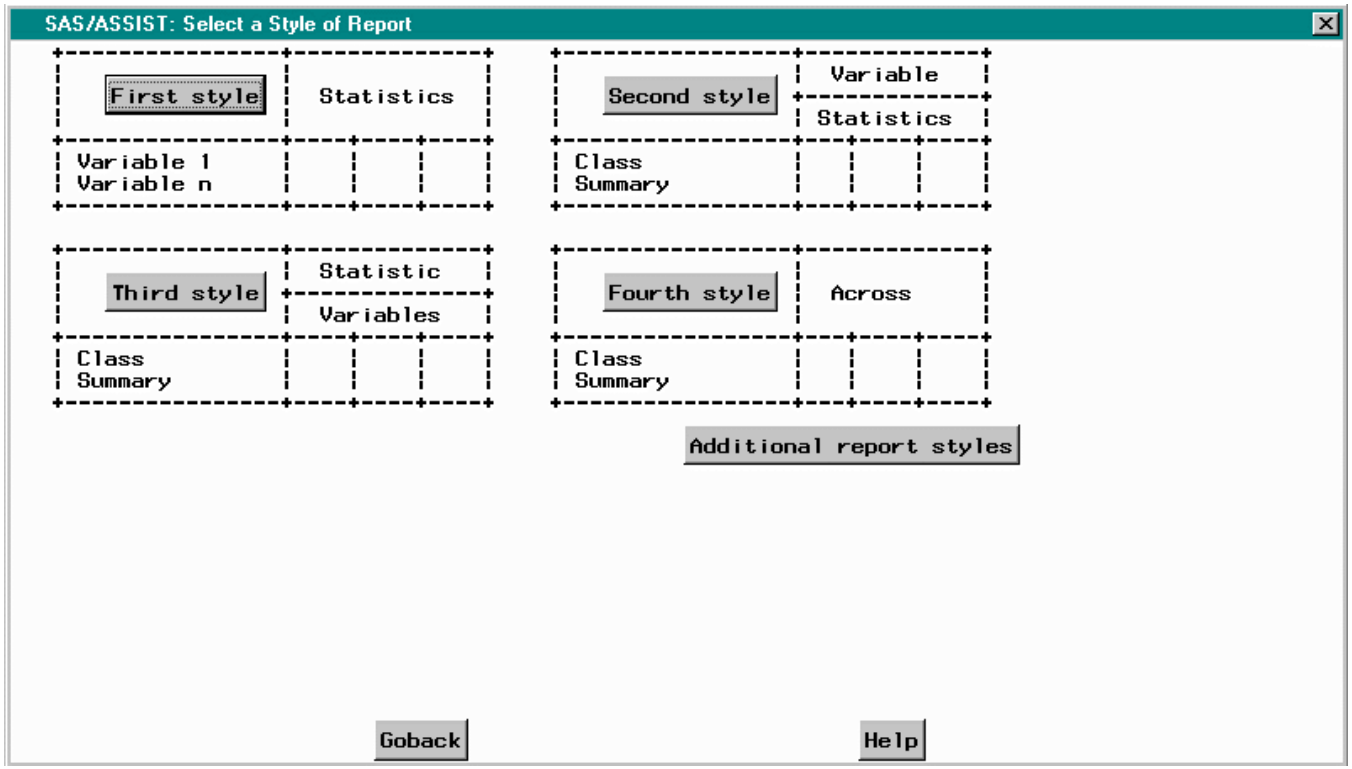
SAS/ASSIST Example

- Click on Tables to produce a table



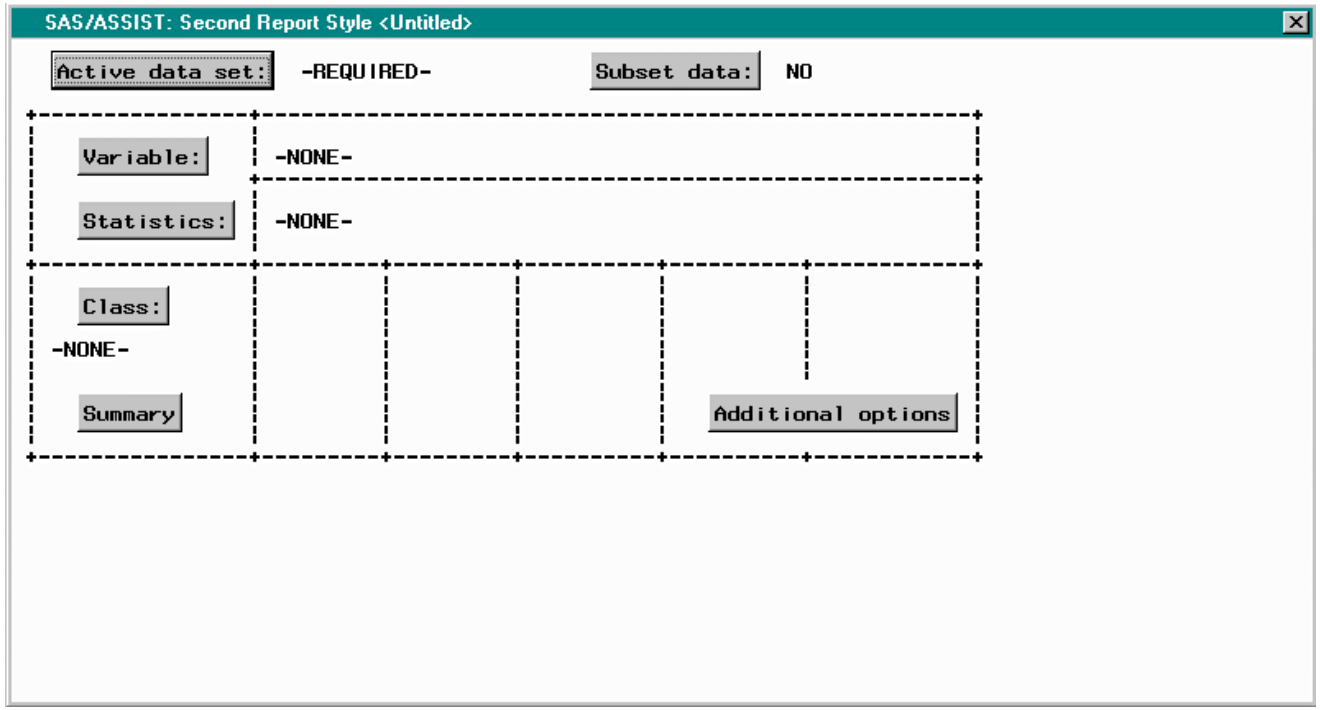
SAS/ASSIST Example (continued)

- Select the table style of your choice



SAS/ASSIST Example (continued)

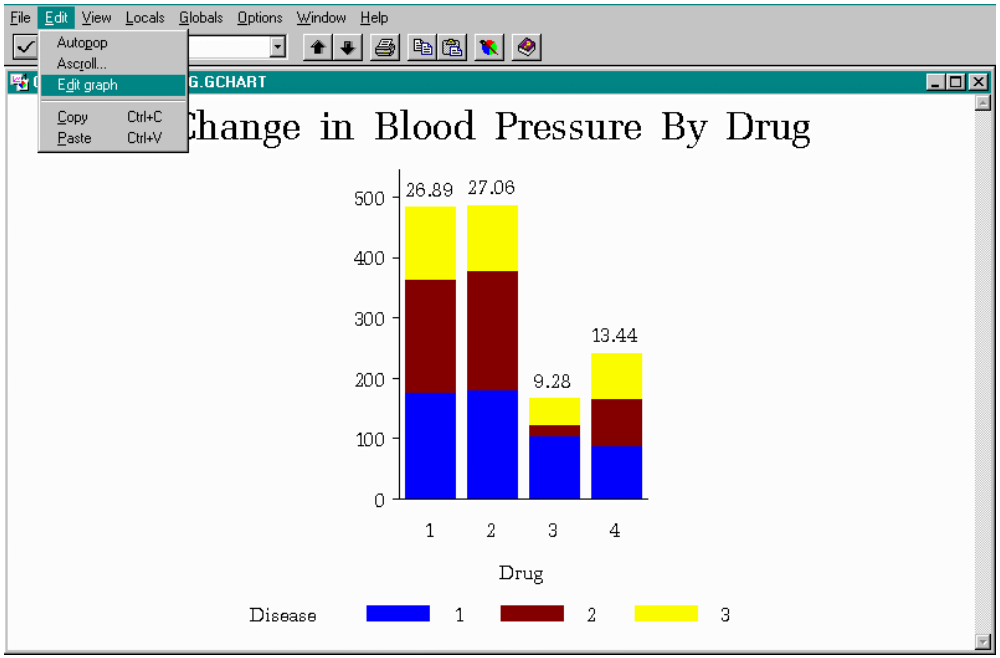
- Click on the gray buttons to enter information to build the table
- To generate the table select Run from the Locals menu



SAS/GRAPH Graphics Editor

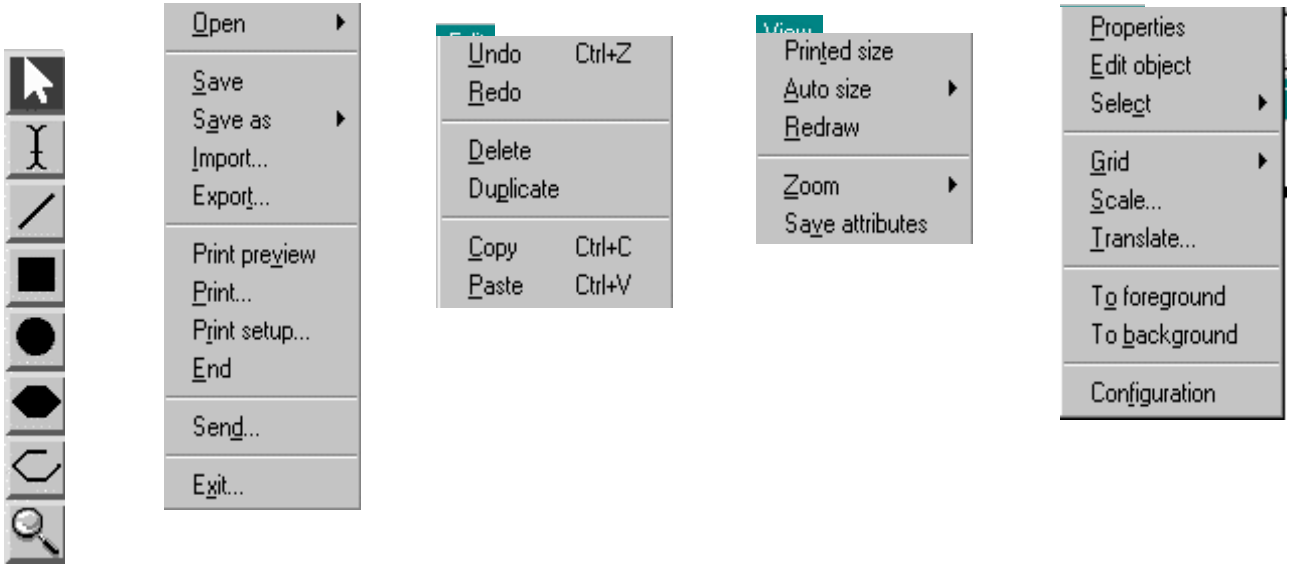
- To edit a graph select Edit graph from the Edit menu in the GRAPH window

```
* Sample SAS/GRAPH Program;
goptions reset=all ftext=zapf;

pattern1 v=s c=blue;
pattern2 v=s c=red;
pattern3 v=s c=yellow;
axis1 minor=none label=none;

title 'Change in Blood Pressure By Drug';
proc gchart data=sample.drug;
 vbar drug / discrete
             sumvar=chang_bp mean
             subgroup=disease
             raxis=axis1;
run;
```



SAS/GRAPH Graphics Editor (continued)

- Use the toolbar to select various functions
- Or the menus to save and customize the graph



The End